

REMARKS

Claims 1-17 and 21-24 are currently pending in the application. Claims 18-20 have been withdrawn by the Examiner as drawn to a non-elected invention based on Applicants' provisional election to prosecute the claims of Group I. Support for new Claims 21-14 may be found throughout the specification as filed.

In view of the following remarks, reconsideration and withdrawal of the rejections to the application in the Office Action is respectfully requested.

In the Office Action, the Examiner required that Applicants' affirm the provisional election that had previously been made to prosecute the invention of Group I (Claims 1-17) with traverse. In accordance with the Examiner's requirement, Applicants hereby affirm the election to prosecute the invention of Group I (Claims 1-17) and make such election without traverse.

In the Office Action, the Examiner rejected Claims 1-8 and 11-17 under 35 U.S.C. §102 as being anticipated by George, et al, U.S. Patent No. 4,738,876. Additionally, the Examiner rejected Claims 9 and 10 under 35 U.S.C. §103 as obvious in view of George, et al. With regard to the Examiner's rejections based on 35 U.S.C. §102 and 35 U.S.C. §103, Applicants' respectfully disagree with the Examiner's assessment regarding the patentability of the rejected claims and the new claims in view of George, et al.

The currently pending claims are directed to a surface restoration composition comprising an organic acid, a metal oxide and a plasticizer. Alternatively, the surface restoration composition can include an organic acid, a metal oxide and a dispersant. In one embodiment, the dispersant is present in an amount effective to minimize formation of crystals larger than 100Å. In an alternative embodiment, the metal oxide is utilized in particulate form and has a particle size of about 10 nm to about 100 nm. In an additional embodiment, the plasticizer is a phosphate derivative.

The George, et al. reference (USPN 4,738,876) is directed to a process for treating a stone surface utilizing an acid conditioner followed by buffing with a crystallizing agent. According to the method of George, et al., an acid conditioning composition is applied to a stone surface. The acid conditioning composition is allowed to dry on the stone surface and

thereafter, by buffing, a crystallizing agent is applied over the acid conditioner. The acid conditioner composition of the George, et al. reference includes an acid, a surfactant, an organic solvent in an amount effective to increase the evaporation rate of the acid conditioning agent, and water. The George, et al. reference refers to suitable acids for use in the conditioning composition as including oxalic acid. Additionally, the surfactants employed by George, et al. and utilized to ensure good wetting of the treated floor surface by the acid conditioning composition can include non-ionic surfactants, such as, for example, "block polymers including polyoxypropylene/polyoxyethylene condensates ... and ethoxylated alkyl phenols and alkoxyated linear alcohols". See, column 2, lines 55-61. The George, et al. reference also teaches use of an organic solvent "in an amount effective to increase the evaporation rate of the acid conditioning composition when applied to a stone floor surface". Such an organic solvent, according to George, et al. is utilized to prevent prolonged exposure of wet acid conditioner which can cause pitting of the floor surface. Water comprises the balance of the acid conditioning composition. The George, et al. reference makes mention of the fact that the acid conditioning composition may also contain other active ingredients including color enhancers, hardeners, waxes and dust absorbing agents. See column 3, lines 49-53.

The crystallizing agent employed in the George, et al. reference is described as a conventional crystallizing agent containing magnesium hexafluorosilicate as the active crystallizing agent. Alternatively, the George, et al. reference mentions that any hexafluorosilicate salt can be used as the crystallizing agent. Further, it makes mention of the fact that an improved crystallizing composition of the George, et al. reference comprises zinc hexafluorosilicate, an acid stable thickening agent and water. Additional components can include a source of free fluoride ions, a gloss enhancer, an acid, a wax, an organic solvent, a surfactant to aid in wetting the floor, such as ethoxylated linear alcohols, stannic chloride and a dust controlling agent.

Clearly, the formulations of the George, et al. reference are considerably different from the surface restoration composition of the present invention. Additionally, the methodology employed by the George, et al. reference requires a commonly referred to "two-stage" process utilizing two compositions whereas the inventive composition enables surface restoration utilizing a single composition.

The Examiner has taken the position that the George, et al. reference discloses all of the limitations of Claims 1 and 12. Applicants respectfully disagree with the Examiner's position. The Examiner has argued that the George, et al. reference discloses utilization of a plasticizer since it makes mention of a linear alcohol or secondary alcohol as it relates to a surfactant. Further, the Examiner takes the position that dispersants, thickeners and water are also disclosed by the George, et al. reference. Regarding the Examiner's contention that the George, et al. reference teaches utilization of a plasticizer, the George, et al. reference in no way teaches or suggests use of a plasticizer. The George, et al. reference does mention utilization of a surfactant component which may be a linear alcohol or secondary alcohol; however, the surfactants utilized and discussed in the George, et al. reference are utilized as an emulsifier and in no way act as a plasticizer. A true plasticizer would make the resulting film formed more elastic and impart continuous film as is described in the present application. Additionally, such a plasticizer would aid in the workability of the composition on a surface to be restored and also aid in the process of repair of such a substrate. Conversely, the surfactants of the George, et al. reference are employed as intending to be nothing more than wetting agents, *see* for example column 2, lines 50-55. Additionally, the surfactants mentioned by the George, et al. reference in no way function as plasticizers since the surfactants mentioned and those that would be useful as wetting agents would not have the necessary end group functionalization such that they would be capable of acting as plasticizer. One of ordinary skill in the art would readily understand that a plasticizer is used to improve flow and, therefore, processability ... (See attached pages 499-500 of Textbook of Polymer Science by Fred W. Billmeyer, Jr., 1962)

Additionally, converse to the Examiner's position, the George, et al. reference makes no mention of utilization of dispersants or thickeners in the acid composition. As previously mentioned, at column 3, lines 49-55, the George, et al. reference mentions other active ingredients commonly employed, including color enhancers, hardeners, waxes and dust absorbing agents. None of these additional components are dispersants or thickeners for the composition.

Clearly the surfactants of George, et al. do not function as plasticizers and would not be considered a plasticizer. Additionally, the compositions employed in the George, et al. reference and its teachings in no way suggest the surface restoration composition of the present invention in that not only are necessary components missing from such teachings, but

the George, et al. reference also teaches utilization of a two step component system i.e., an acid conditioning composition followed by a crystallizing agent. Additionally, the crystallizing agents in the George, et al. reference are clearly taught away from in the instant application in that utilization of such crystallizing agents such as silicofluorides, typically etch the surface causing considerable damage. See page 2, paragraph 0006 of the present application where the George, et al. reference and its shortcomings are discussed.

Further, the George, et al. reference teaches the necessity of using an organic solvent to increase the evaporation rate of the acid conditioning agent, because prolonged exposure of the wet acid conditioner may cause pitting of the floor. See column 3, lines 17-22. The inventive composition does not require such an organic solvent because the inventive composition does not etch the surface.

With regard to the Examiner's position that all of the limitations of Claims 9 and 10 are disclosed in the George, et al. reference, except for the size of the metal oxides and the obviousness of such selection to one of ordinary skill in the art, Applicants' respectfully disagree. As previously mentioned, the George, et al. reference in no way teaches or discloses the limitations of the inventive composition. Additionally, while the Examiner takes the position that one of ordinary skill in the art would have obviously made use of the specific sizes recited for selection of the metal oxides depending on the work piece and/or operational parameters, such is not the case. The discovery of the optimum or workable ranges in this specific instance do not involve routine skill in the art. Rather, unlike the metal oxides utilized in the George, et al. reference as color enhancers and hardeners, the metal oxides of the present invention are utilized for purposes of acting as a filler for the damaged surface, a network stabilizer and binder or gloss enhancer. Prior to Applicants' work herein, it was not recognized by one of ordinary skill that particle size of the metal oxide was critical to its performance as a filler component for surface restoration. Clearly, the specific particle size would not have been obvious to one of ordinary skill in the art as the specific particle size mentioned is required to perform the necessary function as a filler, a function quite different from that disclosed in the George, et al. reference for metal oxides.

Clearly, the George, et al. reference in no way teaches, suggests or renders obvious the present invention. The George, et al. reference, contrary to the Examiner's position, does not teach or suggest each of the components required in the inventive composition. Additionally,

the specific selection of metal oxide particle size is in no way taught or suggested by the George, et al. reference. Further, the selection of such particular particle size is in no way obvious to one of ordinary skill in the art. Further, the George, et al. reference is specific to a commonly referred to "two component system" which would require separate components and application thereof to provide the resulting surface restoration realized by utilization of the inventive composition. Clearly, the present invention is distinct from that disclosed in the George, et al. reference and is in no way anticipated or rendered obvious by the George, et al. reference.

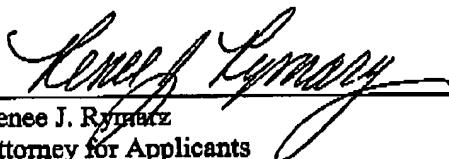
CONCLUSION

In view of the foregoing remarks and amendments, Applicants' respectfully request that the Examiner reconsider and withdraw the rejections discussed above. Applicants' also solicit an early notification of allowance. If Examiner Shakeri has any questions, or believes a telephone discussion would expedite prosecution, Examiner Shakeri is invited to contact the undersigned at telephone number (262) 631-4495.

Respectfully submitted,

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By:


Renee J. Rymasz
Attorney for Applicants
Reg. No. 35,666

JohnsonDiversey, Inc.
(formerly S.C. Johnson Commercial Markets, Inc.)
8310 16TH Street - M/S 509
P.O. Box 902
Sturtevant, WI 53177-0902
Direct Phone: 262-631-4495
Facsimile: 262-631-4021

At

Ba
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Fred W. Billmeyer, Jr.

BOOK OF

ed W. Billmeyer, Jr.

POLYMER SCIENCE

Professor of Chemistry, University of Delaware

Research Associate, Plastics Department

E. I. du Pont de Nemours & Co., Inc.

and Sometime Visiting Professor

of Chemical Engineering

Massachusetts Institute of Technology

Interscience Publishers, a Division of John Wiley and Sons

New York London Sydney

alone but are converted into highly n with particulate or fibrous solids, always compounded, or filled, with fiber cellulose, powdered mica, and ance dimensional stability, impact strength, abrasion resistance, and r as a reinforcing filler for polyester. Soft thermoplastics like coumar- are usually blended with very large of mineral solids such as crushed nds of this type, the resin functions products often have poor tensile strength, abrasion resistance, and tremely important example of the orcement of rubber, discussed in

osetting molding compounds are

ft wood to about 100 mesh. This is ed filler for phenolic resins. on linters or clippings. This filler

ulp or high-quality paper. This filler effects little improvement in prop- ns to produce light colored objects. se fillers lead to compounds with of corresponding wood flour filled

in the form of flock, chopped fiber, roducts such as allylic resins, rather

ibination with more conventional mpact strength in phenolic resins. bbers (Chapter 22C), carbon black mosetting resins significantly. It is ectrical conductivity. he heat, chemical, and moisture

i. Quartz. Quartz-filled phenolics are used in missile nose cones because of their good resistance to extreme temperatures.

j. Mica. This filler leads to excellent electrical properties and low moisture absorption.

k. Glass. In the form of short ($\frac{1}{4}$ – $\frac{1}{2}$ in.) fibers, glass leads to good impact strength, electrical properties, and temperature resistance in many thermo-setting compositions. This use is not to be confused with its function as long fibers or woven fabric to reinforce "polyester" resins, as described in Chapter 19C.

GENERAL REFERENCE

Modern Plastics Magazine, loc. cit.

BIBLIOGRAPHY

1. Seymour, R. B., *Modern Plastics* 38, #1A (Encyclopedia Issue), 522 (1960).
2. Winding, C. C., and G. D. Hiatt, *op. cit.*, pp. 226–227.

D. Plasticizers and Other Additives

Plasticizers

Plasticizers (1, 3) are added to plastics to improve flow and, therefore, processability, and to reduce the brittleness of the product. This is achieved by lowering the glass transition temperature below room temperature, thus achieving a change in properties from those of a hard, brittle, glasslike solid to those of a soft, flexible, tough material (Chapter 7D). An example is the plasticization of poly(vinyl chloride) and vinyl chloride-acetate copolymers (Chapter 15D). Similar changes in properties can, of course, be brought about by altering the molecular structure of the polymer (e.g., by copolymerization, sometimes called *internal plasticization*).

The basic requirements which must be met by a plasticizer are compatibility and permanence. The plasticizer must be miscible with the polymer. This implies a similarity in the intermolecular forces active in the two components, and explains why compatibility is difficult to achieve with a nonpolar polymer such as polyethylene. Permanence requirements demand low vapor pressure and a low diffusion rate of the plasticizer within the polymer, both of which are obtained by the use of high-molecular-weight plasticizers.

500 POLYMER PROCESSING

The efficiency of the plasticizer in bringing about the desired changes in properties is important in determining the proportion in which the plasticizer must be added to the resin. Plasticizer efficiency may be evaluated by a number of different semiempirical tests. Some of these measure the amount of nonsolvent needed to cause phase separation when added to polymer-plasticizer solutions (dilution ratio), the viscosity of dilute solutions of the polymer in the plasticizer, polymer-solvent interaction constants measured on these solutions, the depression of the glass transition temperature, the melt viscosity of the plasticized polymer, the electrical or mechanical properties of the plasticized polymer, or the molecular size and shape or viscosity of the plasticizer itself. Not all these tests, needless to say, rate plasticizer candidates in the same order. The selection of a particular plasticizer still depends to a large extent upon empirical results rather than theoretical predictions.

The following types of plasticizers are in common use (2, *Modern Plastics*, loc. cit.):

- a. Phthalate esters, accounting for over half of the total volume of plasticizers used.
- b. Phosphate esters, chiefly tricresyl phosphate, valued primarily for their flameproofing characteristics.
- c. Adipates, azelates, oleates, and sebacates, used chiefly in vinyl resins for improving low-temperature flexibility.
- d. Epoxy plasticizers, produced by reacting hydrogen peroxide with unsaturated vegetable oils and fatty acids.
- e. Fatty acid esters from natural sources, used primarily as extenders to reduce cost (*secondary plasticizers*).
- f. Glycol derivatives, employed mainly as lubricants and mold-release agents, and as plasticizers for poly(vinyl alcohol).
- g. Sulfonamides, used to plasticize cellulose esters, phenolic and amino resins, and amide and protein plastics.
- h. Hydrocarbons and hydrocarbon derivatives, serving as secondary plasticizers.

Other additives

Antioxidants The role of antioxidant in preventing or inhibiting the oxidation of polymers is usually filled by a substance which itself is readily oxidized, although in some cases the antioxidant may act by combining with the oxidizing polymer to form a stable product. Common antioxidants fall in the classes of phenols, aromatic amines, and salts and condensation products of amines and aminophenols with aldehydes, ketones, and thio compounds.